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Research

ON another page we publish an account of the official opening, by the Minister of Agriculture, Fisheries and Food, of the new Biological Products and Standards Building at Weybridge; and it was gratifying to note the Minister's appreciation not only of the value of this particular department, but of the whole work of our colleagues at the Laboratory. They had earned, he said, an international reputation for their services to agriculture—and he might well have added for their great contribution to the advancement of veterinary knowledge.

In view of the astonishing public ignorance of what the veterinary surgeon is, and does, it has been heartening, within the recent past, to note the advance of the profession's prestige at least in official quarters. The Gowers Committee on foot-and-mouth disease, and the Arton Wilson Committee both recognised, in generous terms, the value of our work; a noted veterinary teacher has just been invited by the Committee of the Privy Council for Agricultural Research to follow a non-veterinarian on the Agricultural Research Council; a British virologist, as we announced last week, has accepted a senior American research post, for which, it may be surmised, competition was international. All these evidences of the growing esteem in which the profession is held by those best qualified to judge its work, reflect upon the whole body of veterinarians, and it is proper and reasonable to find satisfaction in it.

This journal is at times criticised by a section of its readers for devoting too much space to the publication of research papers. Yet where else, if not in the profession's own press, should such papers appear?

Already the profession numbers among its scientists those whose names are known far outside its own ranks. There are younger men of notable ability coming on, and we feel it to be a primary *raison d'être* for this journal's existence to be able to add to the literature both of applied and of fundamental veterinary research.

The tendency in our education, as in modern practice, is strongly towards the scientific rather than the empirical approach. The latter did, indeed, in the hands of earlier generations, achieve an astonishing effectiveness, and there were clinicians whose diagnostic instinct was akin to genius. But those days are passing; they are, in fact, virtually over except in individual cases. A long and rigorous university training, familiarity with scientific techniques and precision apparatus, and laboratory diagnostic aids; these are, broadly speaking, the background of the present-day veterinarian, and in consequence he is more indebted to his scientific colleagues, and more congruous with them than his predecessors used to be.

In opening the new building at Weybridge, the Minister reminded his audience that, in spite of all the advances made, immense losses through premature death of stock or lowered productivity still occur everywhere in the world. The call for higher agricultural efficiency is at the same time a call for intensified endeavour by the profession. It may be added that new techniques and new forms of management have provided their own peculiar problems, so that for each fresh territory of knowledge conquered, new vistas open beyond. The Minister said, too, that knowledge gained ought to be shared. That is a primary function of the technical and professional press; and members of the British Veterinary Association may reflect with satisfaction that their own journal, describing the work of their own colleagues, is read all over the English-speaking world and on the continent of Europe as well.

An Experimental Study of the Epidemiology of Parasitic Bronchitis in Calves

BY

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Introduction

THAT an adequate understanding of the epidemiology of the helminthiasis of grazing animals cannot result from laboratory experimentation, even when supplemented by the study of naturally occurring outbreaks, has been pointed out recently (Michel, Ollerenshaw & Rose, 1956). Epidemiological experimentation, the study of carefully regulated situations in which the parasite can complete its life cycle, is essential to the interpretation of the results of laboratory experiments and in relating these to field observations.

Such observations on outbreaks in adult cattle and consideration of the resulting circumstantial evidence led Michel & Shand (1955) to conclude that sudden exposure to a high herbage infestation was necessary to produce disease. In cases where every animal was susceptible, and infection was introduced from outside, the severity of symptoms in different groups of cattle seemed to depend on the magnitude of the infestation to which they were first exposed, and that the infection did not build up gradually as between animal and pasture—a conclusion which has since been supported by the experimental results of Michel & MacKenzie (1956). It was further concluded that conditions for the creation of high herbage infestations were more favourable at certain times of the year and in certain types of sward.

These indications were to some extent complemented by those derived from field experimentation (Michel & Parfitt, 1955) in the course of which a number of situations were examined, albeit somewhat cursorily. Of the conclusions drawn, two are of particular interest. Firstly, that the concentration of larvae on the herbage closely determines the fate of a calf exposed to it ; and, secondly, that the herbage infestation itself is determined largely by factors other than the number of larvae being passed on to the pasture in the faeces.

It appeared desirable to pursue these indications further, and it was decided to examine a single experimental situation for a fairly long period of time. The experimental period from August 1953 to December 1955 very fortunately provided both a very wet and a very dry summer.

Methods

Half an acre of a moderate agrostis—a rye grass sward having only little white clover—was used. This paddock was first infected by introducing an experimentally infected calf (No. 2576) on August 3rd, 1953, which had almost thrown off its infection. A second calf (No. 2687) was put in on the 21st, and thereafter a new calf was added every five weeks. The calves were mostly of the Ayrshire breed and the aim was that they should be four months old when put on the paddock. This aim was not always realised, nor was it possible to rear the calves in a strictly controlled or standardised fashion, and it transpired that two had become very lightly infected with lungworms before being put on the paddock ; this however, did not appear to affect the results materially.

To control infestations of stomach and intestinal worms large weekly doses of phenothiazine were given to all calves. The results were gratifying. The mean *post-mortem* worm counts for all the animals that died or were killed were 27 in the stomach, 1,080 in the small intestine and 54 in the large intestine. The highest counts recorded were only 200 in a stomach, 5,700 in a small intestine and 359 in a large intestine. Meanwhile, it was very evident that the effect of phenothiazine on lungworms either within the host or on the pasture was negligible, a finding which did not support the hopeful preliminary conclusions of Jarrett, MacIntyre & Urquhart (1954).

Herbage samples and samples of faeces were examined weekly by the procedures that have been described elsewhere (Parfitt, 1955), and the lungs of calves were examined *post-mortem* by the procedure described by Michel (1954).

Results

Details of the animals used are given in Table I. The measurements made of the concentration of larvae in faeces and on the herbage are summarised in Fig. 1 ; larvae recovered per pound of herbage is plotted in a heavy black line, and above, smaller graphs show the faecal larval counts of each calf, and also indicate when it was in the paddock. Clearly the areas subtended by these smaller graphs provide a measure of the total number of larvae being passed in the faeces on to the paddock. It will be seen that there are very great variations in the relationship between the numbers of larvae being passed and the resulting herbage infestation, and that the translation of larvae in faeces into larvae on herbage proceeds to a greater extent at some seasons of the year than at others. Thus it is clear that in winter conditions for translation are poor, the larvae passed by calf 2693 in January of 1953 and those passed by 3359, 3381 and 3439 in the winter of the following year producing a negligible rise in herbage infestation. In autumn, and in late spring and early summer, conditions would seem to be very favourable, and high herbage infestations are liable to results. The great susceptibility of the larvae to desiccation is reflected in the low herbage infestation

TABLE I.
DETAILS OF THE ANIMALS USED

No.	Age in months	Date put in paddock	Removed, killed or died		Time in paddock. Days	Mean herbage larval count over first nine days	Lungworms recovered *post-mortem*					
							>3 cm.	>2 cm.	>1 cm.	>3 mm.	< 3 mm.	TOTAL
2576	5	3.8.53	12.4.54	R	252	0						
2687	3½	21.8.53	6.10.53	D	46	1.37	2,404	25	49	197	116	2,791
2649	5½	25.9.53	15.10.53	D	20	13.3	2,728	—	428	1,706	—	4,862
2859	5½	31.10.53	30.11.53	D	30	6.69	2,181	124	116	87	226	2,734
2693	6½	7.12.53	27.1.54	D	51	1.77	19	15	—	—	—	34
2700	5	11.1.54	7.10.54	R	269	0						
2866	4½	15.2.54	9.6.54	D	114	1.24	1,470	174	80	350	872	2,946
2579	4	22.3.54	30.9.54	K	192	0	1	3	1	0	0	5
3034	4	26.4.54	19.5.54	D	23	1.76	2	11	42	120	290	465
3082	3½	29.5.54	17.6.54	D	19	117.2	—	52	725	1,800	3,555	6,130
3095	4½	8.7.54	30.7.54	D	22	52.0	5,015	595	745	608	732	7,695
3154	4½	7.8.54	18.10.54	D	72	1.32	796	67	44	11	—	918
3242	4	11.9.54	4.10.54	D	23	16.55	2,486	5,560	1,200	2,100	1,920	13,266
3344	3	16.10.54	6.11.54	D	21	48.6	232	176	250	575	840	2,073
3359	4	20.11.54	2.2.55	D	74	1.4	335	—	—	—	—	335
3381	4½	24.12.54	11.7.55	R	199	0.33						
3439	3½	29.1.55	16.5.55	K	107	0.16	41	7	7	10	36	101
3474	3½	5.3.55	16.5.55	K	72	0	12	7	10	39	57	125
3574	3	9.4.55	31.12.55	R	266	0						
3643	2½	14.5.55	12.9.55	D	121	1.44	537	7	1	3	184	732
3659	3	18.6.55	11.7.55	D	23	2.7	707	336	311	295	135	1,784
3712	3	23.7.55	29.8.55	D	37	2.62	677	19	7	2	4	709
3574	3	27.8.55	17.10.55	D	51	1.94	181	30	18	25	37	291
3793	3	1.10.55	29.11.55	D	59	1.92	502	7	3	3	8	523

in August of both 1954 and 1955 as also during the whole of the abnormally dry summer of 1955 when the seasonal pattern of herbage count seen in the previous year was repeated but on a reduced scale.

While the herbage infestation seems to follow a seasonal pattern which depends on climatic factors to a far greater extent than on the numbers of larvae being passed on to the herbage, the fate of the calf is evidently determined by the herbage infestation. Calculations were made of mean herbage counts for various periods of time after the introduction of each calf, in order to determine which period gave the best correlation with the fate of the calf, as measured by the period of its survival. It transpired that the mean herbage count over the first nine days gave the best fit, and how remarkably close the correlation is may be seen in Fig. 2. This shows that the level of herbage infestation over the first nine days determines the fate of the calf no matter what changes in herbage infestation may occur thereafter. If the mean level of the herbage infestation to which the calf is exposed is less than one larva per pound during the first nine days the infection will become patent but the calf will survive ; if it is between one and three larvae per pound the infection will become patent and the calf will die ; if the count is above three larvae the calf will die in the minimum period of 19 to 23 days in a fog-fever-like syndrome which has been discussed elsewhere (Michel, 1954). It will be seen that the range between a grass count which does little harm and one which exerts the maximum possible effect is very narrow, especially when compared with the great fluctuations in herbage count which are observed and which are largely due to the effect of climatic factors on the translation process.

Discussion

It is evident that climatic factors very largely determine the extent to which larvae in faeces become infective larvae on the herbage, the process of translation as it has been called (Rose & Michel, 1956). Translation coefficients, as used by Spedding & Michel (1956) which give a measure of the proportion of larvae being translated from faeces to herbage, have been calculated for some of the data from the present experiment, and it appears that they are related to the rate of herbage growth. The relative values for this, as inferred from transpiration data, were kindly made available by Mr. L. P. Smith of the Meteorological Office. This relationship between translation and herbage growth may be of many different kinds, and it appears from more detailed experiments that the effect of climate on translation is neither simple nor direct.

The chief factors involved and their relationships are indicated in Fig. 3. It was concluded in the course of earlier work (Michel & Rose, 1954) that larvae will not get on to the herbage unless the faeces themselves do so. The consistency of the faeces largely influences the degree to which the faeces can be spread and thereby plays an important part in translation (Rose & Michel, 1956). Probably the principal way in which the climate exerts an influence on translation is through its effect on the rate of herbage growth which in turn determines the consistency of the faeces. The area contaminated may be increased by mechanical agencies including the feet of cattle and some of the operations of husbandry. The disintegration of faeces by rain also plays a part, but both this and mechanical spreading depend on whether the

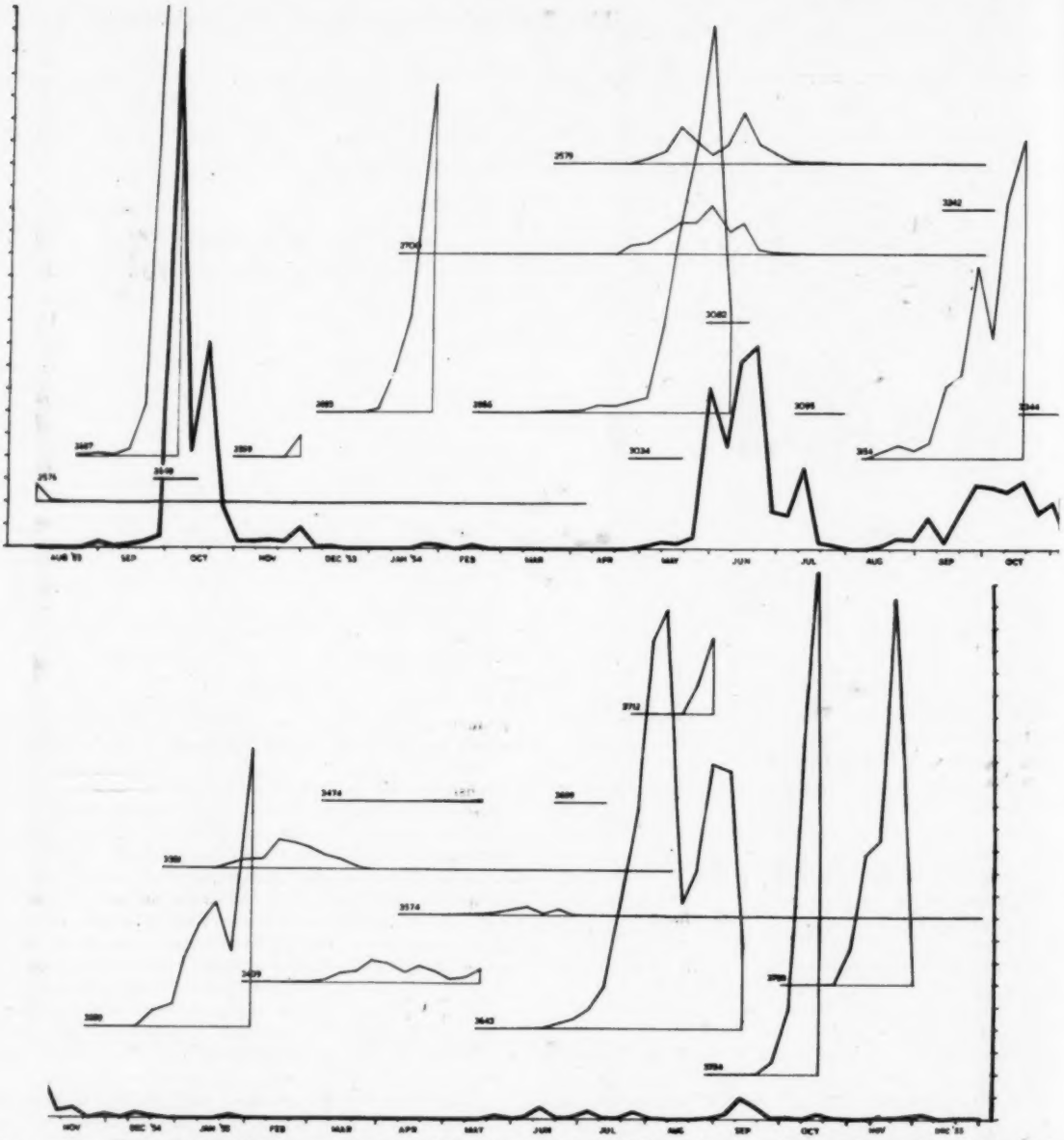

FIG. 1.—The course of the infection on the paddock' (continu ous black line) and in the calves grazing on it (small graphs). One division on the vertical scale represents 20 larvae per lb. of herbage or 50 larvae per gramme of faeces.

climate has been such as to preserve the faeces in a suitable condition.

Besides the dissemination of larvae and faeces over the herbage the process of translation depends on the initial survival of the larvae. This is largely influenced by the microclimate among the herbage which, in turn, depends partly on the state of growth and composition of the sward. The rate of development of the larvae which depends upon temperature may materially affect the translation process. A decreased rate of development will mean that the larvae are exposed to destructive factors for a longer period before reaching the infective stage. Michel & Rose (1954) showed that the initial mortality was always high and that desiccation is the chief agency in the destruction of larvae. The different developmental stages do not differ in their susceptibility to desiccation but, as shown by Rose (1956), there is a marked difference in the susceptibility of infective and uninfective larval stages to the effects of low temperature,

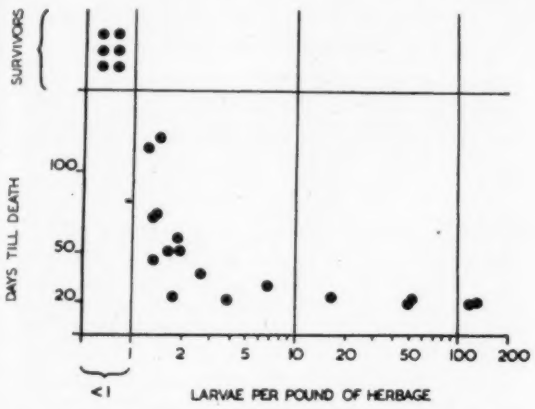

FIG. 2.—The relationship between the fate of the calf and the mean herbage infestation during the first nine days of the calf's exposure.

first and second stage larvae being more readily killed by freezing. This, together with the cessation of herbage growth and consequent formed condition of the faeces, will account largely for the poor conditions for translation in winter. Thus it is very difficult to add to a herbage infestation in winter though an existing herbage infestation, on account of the high humidity in the herbage, will tend to persist rather better at this time of year. The herbage infestation, therefore, will tend to decrease gradually during the early winter and it will always be very low in early spring. In late spring and early summer, as the rate of herbage growth increases, steep rises in herbage infestation are possible but will not persist very long, dry conditions destroying larvae and decreased grass growth hindering translation. In autumn, increases in herbage infestation may again occur and will persist longer than in summer. It is in terms of these processes that the seasonal pattern of herbage infestation as seen in these experiments may be interpreted.

The results of this investigation also throw an interesting light on the validity of herbage sampling. It is plain from the close correlation between herbage infestation and the effect produced on the calf that grazing and sampling are qualitatively alike although, as has been shown by Michel (1955) there is usually a quantitative difference, the observer with his pair of scissors consistently picking up more larvae than the grazing calf. Indeed, when sampling was not at random but every effort was made to avoid what might be contaminated herbage, the samples taken still tended to contain a greater concentration of larvae than the herbage taken by the calf. More recent evidence suggests that where conditions for translation are favourable the discrepancy between the concentration of larvae in herbage taken by the calf and in random samples is less than when translation is low. Presumably when the faeces are well disseminated over the herbage the observer is relatively less efficient at avoiding faeces than is the calf.

The most significant result emerging from the present investigation concerns the short duration of the period in which the level of the herbage infestation determines the fate of the calf. As has been shown there is a remarkably close relationship between the fate of the calf and the mean herbage count during the first nine days that the calf is exposed to infection. It would appear that there must be some revision of the concept of lungworm population gradually increasing, as between host and pasture, until a sufficient worm burden results and disease appears. In field experiments designed to study this question Michel & MacKenzie (1956), using older cattle, concluded that the infections in their experimental animals were in no part referable to larvae which these animals themselves had passed, and that the relevant part of the infection process occupied only a very short space of time. The period of nine days observed in the present experiment as determining the fate of the calf should not be regarded as having an absolute meaning in terms of the resistance of the calf. Experiments still in progress show that the ability of the calf to prevent the initial establishment of worms, the phenomenon for which the term "protection" has been suggested (Michel, 1953, 1956), does not appear suddenly. Twenty days after the administration of a dose of 3,500 larvae the calf can, on being re-infected, already prevent the establishment of three-fifths of the larvae that would have become established had it not experienced that earlier infection. After 70 days the proportion has risen to 19/20ths. Moreover it appears that the rate at which the protection mechanism develops depends on the size of the first or immunising dose. It would be wrong, therefore, to think of a calf as being susceptible to infection for nine days and entirely refractory thereafter. The danger period, which in the particular circumstances of the present experiment was nine days, is a function of the resistance of the calf and of the maximum potential rate of acceleration of increase in the herbage infestation.

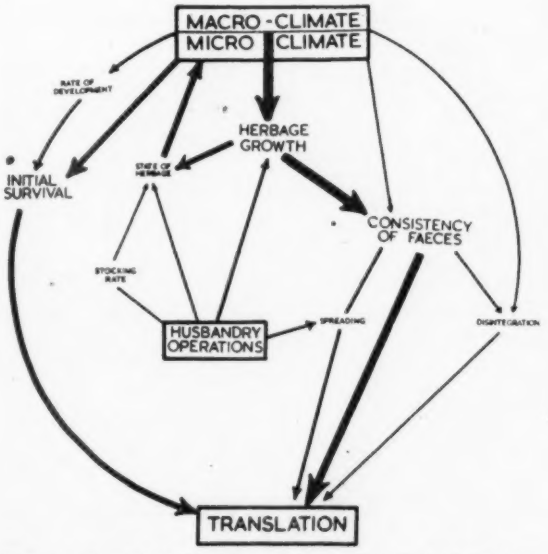

FIG. 3.—Possible trains of causation in the effect of climate on the process of "translation."

With the passage of time the number of larvae ingested, or the herbage infestation of the pasture, becomes of less importance to the fate of the calf. Exposure to light infection results in a slow development of the protection mechanism, exposure to heavier infection to a more rapid development. In both cases however, the rate of uptake of larvae that a calf can resist at a given time after first exposure to infection depends on the rate of uptake which it has already experienced. One may visualise a rate of acceleration of increase of the herbage infestation, which, whether it starts from a low or a higher level, will not exceed the power of resistance of the calf. It would require an acceleration in the rate of increase greater than this to add significantly to the severity of the infection. Where conditions are such as to permit such an increase, the danger period would presumably be longer.

In the same way factors tending to retard the development of protection would have a similar effect. Whether such conditions can occur, and in what circumstances cannot emerge from the present investigation, but it can safely be said that the experimental conditions were not less favourable to the increase of herbage infestations than might be expected under normal farming conditions and that it should be possible to create situations in which the potential rate of increase of the herbage infestation is such that the danger period is short. Means can be devised of ensuring that the herbage infestation is very low when calves are first exposed to it and if it can be shown that a light lungworm infection does little or only temporary harm, then it would seem that the concept of a danger period of limited duration might become the basis of control measures.

There are also indications that the idea of a danger period of very limited duration may be applicable in the case of other helminth infections.

Summary

An experiment is described in which a small paddock was infected with *D. viviparus* and a susceptible calf added every five weeks. In this experimental situation it appeared that the extent to which larvae in faeces become larvae on herbage is the chief factor determining the herbage infestation which, in consequence, follows a seasonal pattern.

The fate of the calf would seem to be entirely dependent on the level of herbage infestation over the first nine days that it is in the paddock, and is not influenced by subsequent changes in herbage infestation.

These results and their implications are discussed in the light of the results of other experiments on host resistance and the bionomics of the larvae.

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Trichophyton mentagrophytes : Natural Infection in Pigs

BY

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Introduction

WHILE examining material submitted to them during the Survey of Animal Mycosis sponsored by the Agricultural Research Council in 1951, Ainsworth & Austwick were unable to find a dermatophyte in any of the samples of porcine origin (Ainsworth & Austwick, 1954).

Clinically, *Pityriasis rosea* in the pig (Glässer *et al.*, 1950) resembles ringworm in man and is often erroneously so described. It is believed that the natural infection in pigs due to *Trichophyton mentagrophytes* is described for the first time in Britain.

Clinical Findings

During December, 1955, a large white fattening pig of five months of age suffered for several weeks from pruritus and dermatitis. After six weeks the only evidence of the disease consisted of rounded patches of golden tinted hairs on the thorax and flanks. A six-month-old gilt had also shown a similar lesion for a month. There were a number of vertical elongated fresh red traumatic lesions on both sides of the thorax as a result of the pruritus. Examination of the skin revealed a number of small red roughly circular areas on the neck and sides of the trunk, while two larger lesions were noted. One of these, measuring 5 by $3\frac{1}{2}$ inches, occurred below and behind the right ear (Fig. 1), and the other, measuring 3 by 2 inches, was present on the medial aspect of the left thigh above the level of the patella (Fig. 2). These lesions were red in colour, covered by a thin, brownish dried crust, under which, after clipping the hair and washing off the debris, numerous red upstanding hair follicles were visible. The circular lesions with a raised margin found in *Pityriasis rosea* are shown (Fig. 3) for comparison. With epilation forceps a number of hairs were removed and those with a root sheath were chosen for laboratory examination. After treatment for a few seconds with hot 10 per cent. potassium hydroxide a hair was flattened under a cover glass. Numerous spores of 3μ were evident forming a sheath round the root of the hair (Fig. 4). Branching hyphae of 2μ diameter were noted within the hair chiefly running lengthwise. The mycelium in many cases extended from the root bulb (Adamson's fringe) outwards for one-third the length of the hairs; branching, suggesting outward growth, was evident at the outer limit of mycelial development (Fig. 5). Longitudinal sectioning of

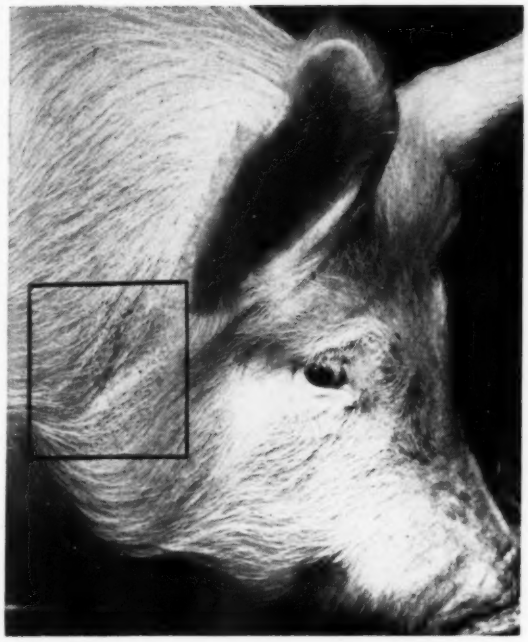

FIG. 1.—*T. mentagrophytes.* Six-month-old gilt. Skin lesion 5 by 3½ inches.

FIG 2.—*T. mentagrophytes.* Six-month-old gilt. Skin lesion 3 by 2 inches.

FIG. 3.—*Pityriasis rosea.* Pig three months old.

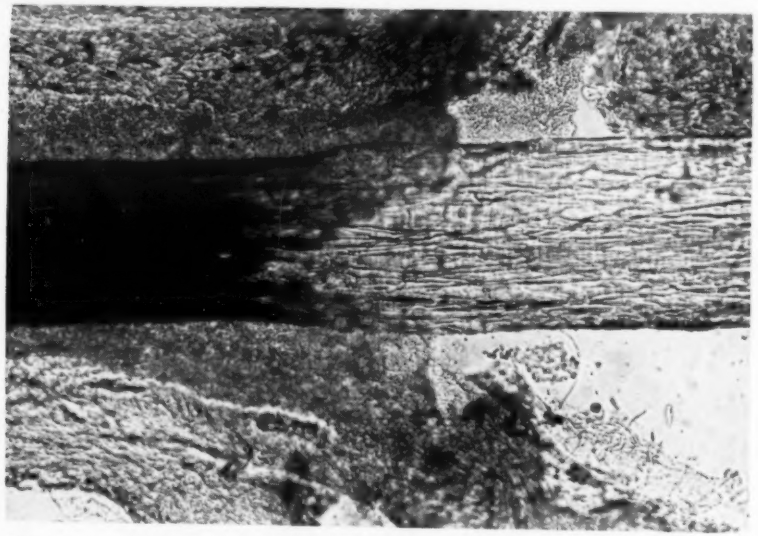

FIG. 4.—*T. mentagrophytes.* Six-month-old gilt. Sheath of spores 3μ diameter around hair and endothrix hyphae of 2μ. Ten per cent. KOH unstained. × 130 approximately.

FIG. 5.—*T. mentagrophytes.* Six-month-old gilt. Outer limit of mycelium in a hair. × 210 Modified Gram Stain (Claudius).

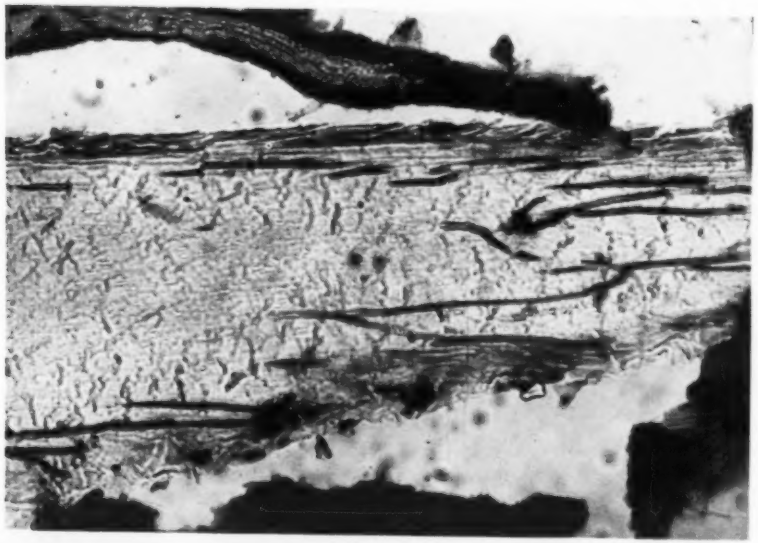

FIG. 6.—*T. mentagrophytes.* Six-month-old gilt. Hyphae within the medulla and cortex; spores between cortex and medulla. Periodic Acid Schiff Stain. × 480.

the hair showed that the hyphae had invaded the cortex and medulla of the hair (Fig. 6). Spore formation within the hair occurred chiefly between the cortex and medulla.

Identification of Dermatophyte

After teasing a hair in sterile distilled water on a slide, inoculations on nutrient agar (Austwick, 1954) and Sabouraud's glucose agar produced typical growths of *Trichophyton mentagrophytes*. This strain produced a purple colour on the latter medium and the surface growth was very granular in appearance.

Histological Examination

Two small pieces of skin were removed for histological study. Sections were stained by haematoxylin and eosin, or by the Periodic Acid Schiff Technique after fixation in Bouin's Fluid. Only in a few places where hyphae occurred in the early cornified layers or hair follicles was cornification or crusting of the epidermis notable. Occasional infiltrating cells, chiefly eosinophils, were present in the epidermis. In the dermis masses of infiltrating lymphocytes, plasma cells, fibroblasts and eosinophils were associated with numerous proliferating capillaries. The predominant cells in any one place were either lymphocytes or fibroblasts. At the base of an infected follicle a similar cellular infiltration was present. There was no evidence of secondary infection.

Sequelae

No treatment was carried out. Six weeks after the photographs were taken the lesions had healed without loss of hair. Nine weeks after clipping, the hair over the neck lesion was approximately 5 mm. long, and of the same golden tint noted in the first affected pig. Microscopically these hairs contained numerous brown coloured hyphae, which failed to grow on culture media. Fifteen weeks from the date of photographing, the hairs, only a few of which were of a golden colour, were of normal length. Microscopically only some granular material could be seen distributed along the substance of the hairs. These hairs also proved negative on cultural examination.

Two of three contact gilts developed a few small scattered areas of infection, the most obvious being 1 inch diameter on the volar aspect of the right carpus. The pruritus in these cases lasted about two weeks and no extension of the areas occurred.

Discussion

The origin of the infection has not been determined. The disease did not cause any loss of condition or serious skin blemish; no hairs were shed, and it is probable that the disease is more prevalent than the absence of published data suggests. In pigs kept in dirty surroundings, or pigs with good coats of hair the lesions would not be outstanding and the scratching might well be erroneously related to the activities of mange mites or lice if the pigs are not carefully examined. The golden colour observed in the hairs of the recovered pigs can be related to the brown pigment seen in the dead hyphae within these hairs.

No fungi could be demonstrated culturally or histologically in material from a number of cases of *Pityriasis rosea* which agrees with the findings of the German workers referred to by Glässer, and contrasts with the ease with which *Trichophyton mentagrophytes* was recovered from the case here described.

Summary

1. The occurrence of *Trichophyton mentagrophytes* infection in pigs in Britain is recorded.

2. The disease was self-limiting, healing in less than 10 weeks from the time of lesion development under the conditions prevalent in the outbreak.

Acknowledgments:—I wish to thank Professor G. C. Ainsworth for examining scrapings from *Pityriasis rosea* cases. For the same reason, and confirming the identity of the dermatophytes here reported, I am indebted to Mr. P. K. C. Austwick. I should also like to acknowledge help from a number of members of the technical staff of this School, and especially to thank Mr. R. S. Hood, F.I.B.P., F.I.S.T., for the preparation of the photographs.

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A VOLUNTEER FOR IRAN

Mr. A. W. Moss, General Secretary of the R.S.P.C.A., writes:—

The National Society for the Protection of Animals in Iran urgently require for six months a British veterinary surgeon to put their animal hospital in order and give much-needed treatment to suffering animals, principally donkeys and dogs. A veterinary surgeon with a knowledge of the Middle East would be preferable.

It is an interesting and inspiring post for anyone willing to work hard and prepared to accept a sense of achievement as a more worth-while reward than money. I am quite sure the profession numbers within its ranks those who will realise how great is the need and how much can be achieved by the force of example. Who will volunteer? Further details are given in the advertisement appearing in this issue.

EXAMINATION RESULT

The undernoted candidates have passed the Part II examination for the Diploma in Tropical Veterinary Medicine (D.T.V.M., University of Edinburgh):—

McDonnough, Linton Theodore, D.V.M. (Toronto), and Martin, Heather, M.R.C.V.S.

An Ataxic Condition of Lambs Clinically Simulating Swayback

BY

R. M. BARLOW

Veterinary Department, Edinburgh and East of Scotland College of Agriculture

IN the spring of this year the veterinary department of this college was asked to assist in the diagnosis of a condition of young lambs clinically similar to swayback. Two affected lambs were examined without finding any evidence of demyelinating central nervous disease, and it was decided to investigate the matter further.

History

The condition occurred on a sheep farm situated 1,400 feet above sea level on the southern aspect of a hill in the east of Scotland. The ewe flock was entirely of Blackfaces, which either were bred on the farm or bought in as gimmers. The rams were, with one exception, Border Leicesters. A single Blackface ram was kept to replenish the breeding stock.

In recent years a policy of hill improvement had been followed, the ground been ploughed and reseeded, and repeatedly and heavily limed. Small but increasing losses of lambs from an ataxic condition had occurred during the past two or three years, but this year 50 out of a total of 230 Greyface lambs (22 per cent.) and a single Blackface lamb were affected. The Blackface ram had not been intended for use, but had broken out and tupped a single ewe of the home flock, which gave birth to an affected lamb, and several on a neighbouring farm. His offspring on this second farm were unaffected.

Clinical findings

The principal signs exhibited were hyperaesthesia, nystagmus, inco-ordination of gait, ataxia, and intermittent paralysis chiefly affecting the hind but occasionally the fore limbs. At rest, affected lambs frequently held their heads very high in mild episthotonus. In a large proportion of them the clinical picture became manifest only during, or immediately after, exercise. On driving the flock occasional lambs appeared to lose their balance completely, and with a strong thrust of the hind limbs performed an alarming spiral projectile movement before coming back to earth and rolling over repeatedly. A considerable number were affected from birth, but fresh cases became apparent throughout the first six or seven weeks of life. Both members of each affected pair of twins developed symptoms, but not always at the same time or with equal severity. Lambs which were able to follow their dams and graze throve remarkably well, but others, not so fortunate, developed skin wounds and secondary infections and died or were destroyed. The disease in general appeared to be slowly progressive.

Investigations

In all, 11 lambs were removed from the flock and killed for examination. The method of destruction varied from animal to animal. Two were chloroformed, one was given saturated magnesium sulphate intravenously, six were electrically stunned and then bled, and two killed by severing the vessels in the neck.

Post-mortem examination revealed no macroscopic abnormalities. The central nervous systems of all the lambs and other organs of two of them revealed no significant organisms on culture in glucose broth, meat piece broth or on blood agar.

The brains and spinal cords of all were removed and fixed in Bouin, and representative blocks of the other tissues from two lambs were taken and fixed in formol-corrosive. No abnormalities were recognised in H. & E. stained sections of the latter.

In the study of the C.N.S. H. & E., Mahon's myelin method, the Busch modification of Marchi, Kurnick (1955) and Holmes (1950) were the chief techniques applied. In the H. & E. stained sections necrotic neurons were observed diffusely scattered through the hind brain and cord, but were most numerous in the pons and dentate nucleus. No evidence of encephalitis or generalised toxaemia which might account for these changes has so far been observed. The supplementary techniques revealed structural disturbances in a much greater proportion of cells. In a large number, the neurofibrils appear to degenerate into a finely granular dust, whilst the cytoplasm of the cell becomes swollen particularly round the exit of the axis cylinder. In others the neurofibrils appear to form short rods disposed irregularly towards the periphery of the cell. Local dilatations of axis cylinders, with loss of neurofibrils at points remote from the cell, have been observed also.

Discussion

This condition, which clinically is so similar to swayback, is remarkable in that the pathological changes are so different from the demyelinating lesions of that disease. In addition to demyelination, Innes & Shearer (1940) described degenerative changes in the neurons of the red nucleus, but these were not present in the mild or chronic cases in which they were unable to demonstrate demyelination. In the present series the nerve cell changes are the prominent feature.

A neighbouring farm undergoing a similar programme of pasture improvement has this year also lost a few lambs from a condition clinically similar to that described; but the opportunity of making a pathological examination has not yet arisen. In 1954 Watt (1956) noted an outbreak of disease in young lambs clinically identical with swayback but in which demyelination was absent. The condition occurred on an arable farm carrying 90 Blackface ewes crossed

(*Concluded at foot of col. 1 overleaf*)

In Brief

DEVELOPMENTS IN RESEARCH: ANATOMY

FOLLOWING the pioneer work of Brown (1938) and later Farquharson (1940) on regional anaesthesia, Vitums (1954) has reviewed the distribution of sensory nerves to the horn of the goat in suggesting a site of nerve block for dishorning, and Mosimann (1954) the similar problem in the ox. Mosimann also discusses the possibility of de-sensitising the outer aspect of the skin of the ear by an injection along the ventral aspect of the wing of the atlas. For relaxation of the retractor penis muscle and penis of the ox, Larson (1953) recommends internal pudic nerve block ; the injection is made in the ishio-rectal area with a needle encased in a cannula, and the procedure is aided by rectal manipulation.

On other genital structures Habel (1953) has stressed the need of anatomical appreciation when dealing with laceration of the vulva of the mare and vaginal wind-sucking, and Preuss (1953) has discussed the arrangement of intrinsic uterine musculature of the cow in relation to uterine tensions and contraction.

Of vascular studies Kirby (1953) has studied the blood supply of the ox testis in relation to fertility ; Christensen (1952) has doubted the presence of two independent circulatory pathways in the kidney of the dog in keeping with the anti-shock phenomenon advanced by Truetta ; Magrane (1954) has emphasised the value of a knowledge of the patterns of corneal vessels in relation to diseases of the eye, and Detweiler (1952, 1953) in comparison articles, has related congenital cardiac abnormalities and heart physiology of the dog to E.C.G.s and clinical medicine.

Of orthopaedic interest Dyce *et al* (1952) have contributed on the clinical anatomy of the stifle joint (dog) and introduced the potential contrast orthographical studies ; while Smith & King (1954), freely quoting from Hansen and adding their own observations, have discussed the anatomy of protrusion of the intervertebral disc, and in a later article (King & Smith, 1955) have compared the incidence of " slipped disc " in man and dog. General problems of locomotion have been summarised by Ottaway (1954), and Duckworth & Shirlaw (1955) have written on muscular activity of the bovine jaw in regard to chewing habits. Radiological studies, as indicated above, contribute to aspects of anatomical research of importance to the clinician ; Hickman (1954) has also referred to these and work continues. McGirr (1954) has focused attention on the activities of the adrenal cortex, and this surely will lead to further research on the endocrine system of a nature applicable to practice.

C. W. OTTAWAY (May, 1955).

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An Ataxic Condition of Lambs Clinically Simulating Swayback—*Concluded.*

with Border Leicester rams, and in that year, and subsequently, about half a dozen lambs have been affected annually. In Watt's case, however, all the lambs were affected from birth. Re-examination of some of the material from this case has revealed changes similar to those described.

It is emphasised that at the time of writing the histological study is very incomplete and the description of the changes presumptive. Later, it is hoped to publish a full account of the pathological aspects of this condition, together with results of biochemical investigations and soil and herbage analyses. The purpose of this communication is to draw attention to the existence of the condition so that further material may not be overlooked.

Summary

A condition in lambs clinically resembling swayback but lacking the characteristic lesions of that disease is described. A preliminary investigation into the nature of the lesions has been conducted and it is suggested that this condition may not be uncommon.

Acknowledgment.—I am grateful to Dr. I. Zlotnik for suggesting the Holmes technique, and for his guidance in the interpretation of the results.

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THE VETERINARY SECTION OF UFAW

Dr. N. S. Barron, President of the Veterinary Section of UFAW, speaking at the first UFAW luncheon during the B.V.A. Congress at Leamington on September 20th, welcomed this new venture and hoped that a UFAW luncheon during the B.V.A. Congress would become an annual event.

Occupational Therapy Carriage for Small Animals with Posterior Paralysis

BY
A. D. A. ISHERWOOD
Worthing

IT has been found from experience that, in the case of posterior paralysis, if the animal can be made self mobile and encouraged to exercise, improved results can be expected. The carriage devised, although possibly not an original idea, is easily constructed, effective, and comfortable in use. Basically, it consists of a " U "-shaped frame to which the wheels are attached. It is fitted with shafts adjustable to the width of the animal, and a padded support is suspended from the frame to support the animal under the abdomen. This can be adjusted for height, thus controlling the amount of weight taken on the hind legs.

The accompanying photograph shows the carriage in use. The height of the frame " A " should be approximately one and a third times the height of the animal, and the distance between the wheels should be equal to the height. Holes " B " for the support, consisting of a length of Tubagauze padded with cellulose wadding to form a " sausage," should be placed high on the frame. Shafts are welded to the frame at right-angles. These are bent inwards from point " C " to fit the chest width, and end in small rings. A bandage or soft cord is attached to the rings and adjusted to pass under the chest and over the back where it is knotted with a bow.

When the machine is to be used, it is first placed behind the animal, which is then gently pulled by the hind legs and lowered on to the supporting pad. The chest band is adjusted immediately behind the forelegs and knotted over the back. Slight spring in the shafts maintains an even pressure, and allows movement without chafing. The animal quickly adjusts itself to the use of the carriage and, in a very short time, learns to manoeuvre it round corners and down steps. Defaecation and urination are performed whilst in the carriage without difficulty.

A similar carriage was constructed for cats. Although rather fragile, it worked well until the animal attempted to climb a tree!

The bitch in the photograph, a six-year-old Scottie, is a good example of the way in which the carriage assists recovery. The early history is unknown but, apparently, the animal fell off a chair and became paralysed. Having passed through the hands of several owners, it was eventually adopted by my client. It had been semi-paralysed for six months at least, if not for longer. When first seen, the bitch was unable to stand, and in response to digital pressure had only slight movement in one hind leg and the tail. It was in very poor condition and suffering from cystitis. It moved by dragging itself forward in the sitting position.

An X-ray revealed an old lesion in the spine with vertebral displacement in the region of the last thoracic vertebrae. A grave prognosis was given. The bitch was introduced to a farm with others and fitted into the carriage. It very soon showed keen interest and tried to compete in the everyday activities of the other animals. Adequate food and exercise, and a little treatment comprising sulphamethizole tablets soon cleared up the cystitis and diethylamine acetarsol solution injections at four-day intervals with a rest of 10 days after every fourth injection produced a gradual improvement in the hind legs. At the time of writing, three months after commencement of treatment and exercise, the animal can now stand and walk six or seven steps before collapsing. Progress continues to be made.

FIFTY YEARS AGO

At a Quarterly Meeting of the Royal College of Veterinary Surgeons, reported in THE RECORD of October 13th, 1906, Mr. Sumner moved:—

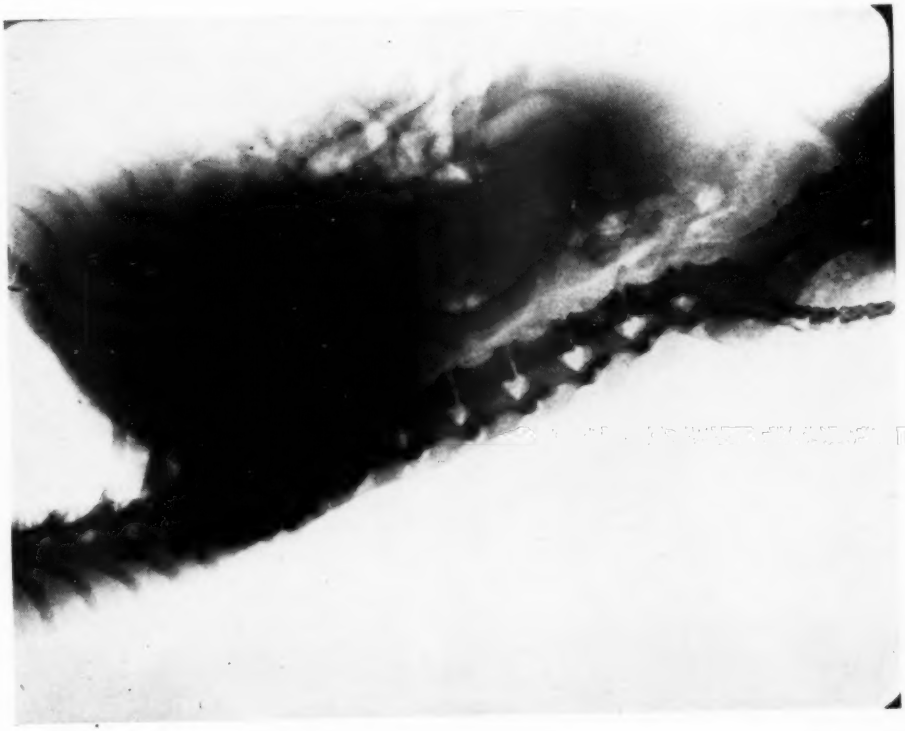
" That the College supports any action in the matter (of meat inspection) to the President of the Local Government Board, by such means as the Council may deem best calculated to bring forward the claims of its members as Inspectors of Meat, and of the Slaughter of Animals intended for the food of Man."

Those present received the suggestion coldly, and the President said: " I do not think, gentlemen, there can be any harm in passing a sort of abstract resolution like this, but, on the other hand, I think the Council should consider whether it is likely to do any good, whether our interests are furthered by blowing our own trumpets on every conceivable occasion, and a little too loudly. My strong opinion is that we should do no good by taking any action over this resolution of the Court of Common Council."

Professor Williams, addressing the Council, said, as it now seems somewhat naïvely: " We are fairly well protected in regard to the matter that Mr. Sumner has brought before us, because you will remember the extract said, ' The inspection shall be carried out by a veterinary surgeon or by other experts.' Of course it is quite a certainty that if we are consulted as to who are the other experts, we will say that we know of no others."

But, all the same, it would seem that after 50 years the " others " control meat inspection, and the profession remains largely excluded.

A. D. A. ISHERWOOD—OCCUPATIONAL THERAPY CARRIAGE FOR SMALL ANIMALS WITH POSTERIOR PARALYSIS



Current Literature

ABSTRACTS

Mikedimide (Methetharimide), a New Barbiturate Antagonist. BAKER, E. (1956). *N. Amer. Vet.* **37.** 3. 219-222.

Methetharimide is ethyl methyl glutarimide and is known as Negimide in Great Britain. Its pharmacology was described in an earlier abstract (*Vet. Rec.* **67.** 8).

In the present article a description is given of its use in veterinary practice and case records are presented relating to four dogs and one cat, all of which suffered respiratory depression or arrest under barbiturate anaesthesia. The antagonist drug was given at a slow rate to three dogs and to the cat, and intraperitoneally to the other dog, with beneficial results in clinical terms of respiratory revival and improved cardiac output, followed by early recovery of consciousness.

Dosage is decided by the effect produced by slow injection: it seems to be 30 to 60 mg. per 5 lb. bodyweight in dogs and somewhat less in cats.

J. T. E.

Critical Tests with Copper Sulfate for Experimental Moniliasis (Crop Mycosis) of Chickens and Turkeys. UNDERWOOD, P. C., COLLINS, J. H., DURBIN, C. G., HODGES, F. A., & ZIMMERMAN, H. E. (1956). *Poult. Sci.* **35.** 599-605.

Under the American Federal Food, Drug and Cosmetic Act, action can be taken when misleading claims are made for preparations sold for the treatment of livestock or poultry. The work reported by the authors was carried out to evaluate the commonly made claim that copper sulphate is an effective treatment for crop mycosis in poultry caused by *Candida albicans*.

Chicks and turkey poults were infected experimentally by dosing them by mouth with cultures of *C. albicans*. The development of mycotic lesions of the crop was demonstrated in the living bird by the use of a panendoscope. The infections were generally mild, asymptomatic and transient. The use of copper sulphate in the drinking water, as a 1 : 1,000 or 1 : 1,500 solution, was ineffective for the treatment or prevention of the experimental disease. Two commercial preparations containing copper sulphate were also ineffective. In some instances the mycosis shown by the treated birds was more severe than that shown by the untreated controls. Abrasion of the crop wall, and the administration of penicillin or oxytetracycline failed to increase the severity of the mycosis.

Parthenogenesis in Eggs of Beltsville Small White Turkeys. OLSEN, M. A., & MARSDEN, S. J. (1956). *Poult. Sci.* **35.** 674-682.

Examination of the eggs laid by a group of 103 Beltsville Small White turkey hens showed that about 22 per cent. exhibited some degree of parthenogenic development. In about 20 per cent. the development was limited to the formation of embryonic membranes, 1.2 per cent. showed blood in addition to membrane growth, while 0.7 per cent. contained embryos. These attained various stages of development, from two days old to fully formed. One live poult hatched and lived for 18 hours. The ability to produce eggs that would develop parthenogenically appeared to be greater in certain families. Environmental factors may also be involved.

Parents' Age Unrelated to Leucosis in Progeny. COLE, R. K., & HUTT, F. B. (1956). *Poult. Sci.* **35.** 729-731.

Poultry breeders are often advised that, as a method of combating lymphomatosis, they should breed from hens as opposed to pullets. Coles (1955) queried this advice on the grounds that a parent bird might increasingly fail with age to transmit to its offspring its genetic resistance to lymphomatosis. He also stated that the parents of genetically resistant families might not reproduce as well as those of susceptible families. The present authors challenge the interpretation that Coles placed upon his experimental data as well as offering further data from their own records. They reaffirm that when a flock is exposed to lymphomatosis infection, the most susceptible birds will be eliminated by natural selection in their pullet year, with the result that the yearling and older hens should, as a group, be genetically more resistant than pullets and should, therefore, produce daughters genetically somewhat more resistant than those of pullets. They state that there is no relation between fertility or hatchability and resistance to lymphomatosis.

E. A. G.

Reference

COLES, R. (1955). *Poult. Sci.* **34.** 312-22. Abstracted in *Vet. Rec.* **67.** 793.

Use of Newer Corticosteroids in Animals. DAVIDSON, J. L. (1956). *Vet. Med.* **4.** 5. 222-4.

The uses of cortisone and the more therapeutically active hydrocortisone are discussed briefly. It is pointed out that these steroid hormones, which are elaborated by the cortex of the adrenal gland, do not cure disease, but aid the animal to withstand a variety of stresses such as infection, shock and intense cold or heat. The fundamental processes whereby they exert their beneficial action are not known and consequently they have been used as therapeutic agents rather at random. Because of generalised effects adrenal cortex hormones are now being used more for local application, for example, in ointments for the treatment of allergic conditions of the skin, nose, ear and eye. Hydrocortisone by intra-articular injection has been used for the local treatment of rheumatic or traumatic arthritis, osteoarthritis, periostitis, bursitis, and synovitis. It may be injected in combination with a broad spectrum antibiotic.

By dehydrogenation of the parent corticoids two new derivatives, delta-hydrocortisone and delta-cortisone, have been produced. Therapeutically, the new compounds produce the same effects as the parent compounds but are three times more active. Delta-hydrocortisone dosage for dogs is as follows:—

5-15 lb. bodyweight—1.25 mg. daily.
15-40 lb. bodyweight—1.25 to 5 mg. daily.
40-80 lb. bodyweight—2.5 to 12.5 mg. daily.

When treatment is to be discontinued the drug must be withdrawn gradually.

A new steroid derivative of high water solubility and suitable for intravenous use is hydrocortisone sodium succinate. This compound can be injected either intravenously or intramuscularly, in high concentration and low volume to give immediate high blood titres for emergencies such as surgical shock. It apparently combats shock by allowing the organism to react to vasopressor mechanisms.

Hydrocortisone cyclopentylpropionate is a suspension which can be used in the same way as hydrocortisone tablets.

Experimental Bovine Traumatic Gastritis. KINGNEY, B. W. (1955). *J. Amer. Vet. Med. Assoc.* **127.** 477-82.

Ten cows were each given two pieces of baling wire and a nail enclosed within a large gelatine capsule. Two days after the onset of symptoms of traumatic gastritis the foreign bodies were removed following rumenotomy.

Symptoms developed 30 hours after the ingestion of the foreign bodies. There was no pathognomic symptom of the disease, the most reliable clinical signs being a rise in temperature, neutrophilia, disturbed appetite for grain, pain over the xyphoid cartilage, suppression of milk flow, atony of the rumen and constipation. Pain over the area of the xyphoid cartilage is probably the most definite clinical manifestation of the condition.

Baling wire appeared to cause more trouble than the nails, the latter passing more often into the rumen. If surgical removal of the foreign bodies is effected within 48 hours from the onset of symptoms, 100 per cent. recovery can be anticipated.

F. R. B.

BOOK REVIEW

Veterinary Drug Encyclopedia and Therapeutic Index. Drug Publications Inc. New York.

The complex compounds which constitute modern therapeutic agents have transformed materia medica into advanced organic chemistry. Therefore the veterinary surgeon of to-day buys most of his drugs ready for use, and prepared for him by an energetic, enterprising, and keenly competitive pharmaceutical industry. The range, profusion, and variety of these " proprietary products " are such that there is a decided need for a veterinary drug encyclopaedia. The book prepared by Drs. Stephenson and Mittelstaedt fulfils this purpose for the American veterinarian. It contains a full description of all American veterinary products, including the active ingredients, mode of action, and dosage rates.

Unfortunately, this drug encyclopaedia is of little use to the British veterinary surgeon as many of the drugs listed are not marketed as such in this country, and British products are not included, unless they happen to be available in the U.S.A. However, maybe this useful publication of Drs. Stephenson and Mittelstaedt, now in its fourth edition, will encourage someone to produce a similar drug encyclopaedia for the British veterinary profession.

Opening of New Building at Weybridge

THE Minister of Agriculture, Fisheries and Food, the Right Honourable D. Heathcoat Amory, visited the Veterinary Laboratory at Weybridge on October 5th in order to open formally the new biological products and standards building.

A distinguished company was present and among those who had accepted invitations were:—

Mr. E. R. Callender, O.B.E., President of the B.V.A.; Professor L. P. Pugh (President R.C.V.S.); Professor T. J. Bosworth; Professor D. L. Hughes; Professor C. S. Grunsell; Professor W. I. B. Beveridge; Dr. W. M. Henderson; Professor H. G. Lamont; Dr. W. R. Wooldridge; Mr. J. F. Timoney; Professor R. Lovell; Sir W. Dalrymple-Champneys; Sir Alan Hitchman; Mr. W. C. Tame; Professor H. G. Sanders; Dr. R. Coles; Mr. J. N. Ritchie; Mr. C. P. Quick; Mr. A. D. J. Brennan; The Hon. F. W. Bulcock; Signor Clemente Boniver; Mr. C. V. Dayus; Dr. Peter Tomic; Dr. A. W. Gledhill; Dr. G. S. Wilson; Mr. B. G. F. Weitz; Professor C. J. Cruickshank; Professor J. McCunn; Dr. A. T. R. Mattick; Mr. W. G. Alexander; Dr. R. F. Montgomerie; Mr. S. L. Hignett; Monsieur L. Rieutord; Mr. W. Downing; Mr. H. E. Harbour; Mr. J. E. C. Coventry; Mr. M. Crawford; Mr. E. Bolton King, and Mr. J. M. Wilson.

As will be seen from the illustration the building is a spacious and a beautifully light one designed in the modern manner. Of particular interest is the form of construction by which the greatest load of the building is taken upon a centre " spine " thus enabling other walls to bear a limited load. It will be appreciated that this vastly simplifies both the provision of extensions to the present building and also any modifications within it.

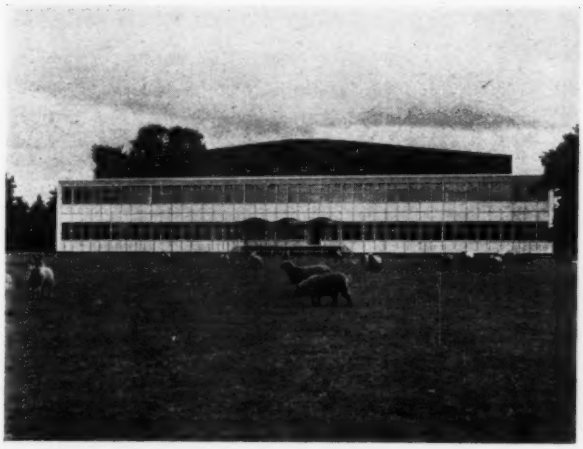
For the rest, it is in the most proper sense of the word functional and appears to be an admirable example of architecture at the service of practical science. As the name implies, its purpose is the production under the best possible conditions of S.19, tuberculin and crystal violet vaccine, together with the testing of biological products generally. A staff of between 60 and 70 will be permanently occupied in the new building.

Perhaps of greatest note are the two freeze dryers by means of which it is intended to produce S.19 in powder form and thus retain its potency for a year instead of for a few weeks, the practical limit of the liquid form. Notable, too, is the completeness of the air-sterilising plant on the top floor of the building which is so designed that each set of rooms concerned with each of the three separate preparations has its own plant.

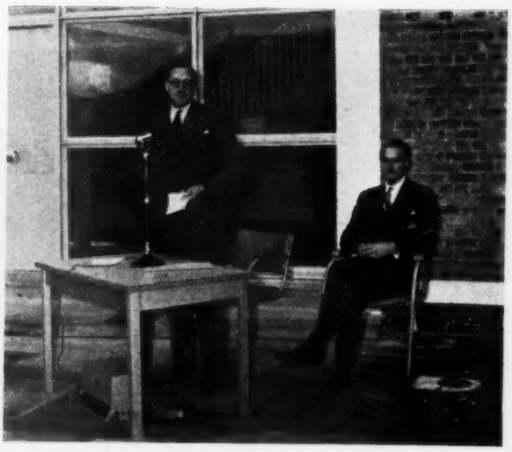
In introducing the Minister at the official opening ceremony, Dr. Stableforth referred to the Minister's interest in agricultural research and to the honour he had accorded the Laboratory by being present that day. Dr. Stableforth paid tribute also to the architects and technicians of the Ministry of Works who had collaborated in the most helpful fashion to ensure that the Laboratory had exactly the type of new building it required.

The Minister's Speech

Mr. Heathcoat Amory recalled that when he first became Minister of Agriculture, one of his first duties

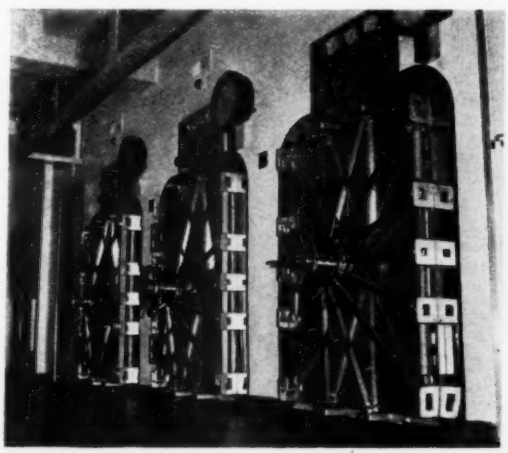


A broadside view of the new building.



The Minister of Agriculture addressing the guests, with Dr. Stableforth on his left. Behind the Minister is the door which he formally opened with a golden key presented by the contractors.

had been to visit the Laboratory. It was on that occasion that the project they now saw completed was made known to him. In spite of the fact that an economy campaign was even then in the air he was quickly and completely convinced that the building must be carried forward. The work done at Weybridge was held in great esteem all over the world, and the Laboratory would add still further to its reputation as time went on. The Minister was certain that the nation was " investing in success " in acquiring equipment to carry on the fight to eliminate disease from farm animals. The new building had cost something like £250,000, but in his view it was a gilt-edged investment. The value of research lay in the transmission of its findings to veterinary officers in the field and to the farmers, and he knew that these things were not lost sight of at Weybridge.



Three of the specially built autoclaves through which all culture media and glassware have to be passed on entering the sterile rooms.

The air-conditioning plant on the top floor of the building. Separate apparatus is used for conditioning the air in each of the three sections of the building, dealing respectively with S19 vaccine, tuberculin, and crystal violet vaccine.

Harvesting *Brucella abortus* for Strain 19 vaccine.

One of the new freeze-drying machines. It is intended to produce at Weybridge freeze-dried S19 which will remain potent for much longer periods than the present liquid form.

The Minister went on to quote some statistics showing the rapid growth in the production of vaccines at Weybridge. He said that in 1939 about 25,000 doses of Strain 19 vaccine were produced. In 1955 the figure was nearly 1,000,000 doses. In 1940, 3,500,000 doses of tuberculin were produced, while last year's figure was over 43,000,000. As to crystal violet vaccine, the 1947 output was 26,000 doses and the 1955 output over 900,000.

Towards the conclusion of his speech the Minister paid a special tribute to Sir Thomas Dalling who he said had conceived the project for the new building in 1944, and had done much of the initial spade work. He regretted Sir Thomas could not be with them that day.

After the opening ceremony, the visitors were divided into parties and were shown over both the new building and the existing laboratories.

Bottle filling.

[Photographs by courtesy of *The Farmers' Weekly*.]

A NEW CHAIR AT GLASGOW

As we go to press we learn that the Glasgow University Court has announced the appointment to the new Chair of Animal Husbandry and Veterinary Preventive Medicine of Mr. J. S. S. Inglis, previously senior lecturer in those subjects at the Glasgow Veterinary School. We hope to publish a note on Professor Inglis's career and attainments in our next issue.

News and Comment

THE B.V.A. AUTUMN CONFERENCE

Many members have been enquiring about tickets for this Conference on "Supplements and Additives in Animal Feeding-stuffs." and we wish to announce that with the October 20th issue of THE VETERINARY RECORD a further copy of the programme will be published with a tear-off slip on which members should apply for tickets, luncheon facilities, etc., on each of the two days. The Conference is open to all members of the profession, but a certain number of places are being set aside for invited representatives of other interested organisations.

The papers to be read will be distributed about a week in advance *to those who have applied for tickets*. Time will be allowed for the author to introduce his paper, but it will be taken as read. It will be of great help to the organisers of the Conference if members of the Association will be good enough to fill in the ticket application form as soon as they receive it.

THE NOMINATIONS COMMITTEE

A meeting of the Nominations Committee, consisting of the Officers of the Association and Chairmen of Standing Committees, was held at No. 7, Mansfield Street, on July 25th.

Present: Mr. E. Wilkinson (President) in the chair, Professor A. Robertson and Mr. E. R. Callender (Vice-Presidents), Mr. H. E. Bywater (Hon. Treasurer), Mr. J. M. Ingram (Hon. Secretary), Mr. G. Atkinson (Chairman, Veterinary State Medicine Committee), Mr. S. Jennings (Chairman, Home Appointments Committee), and Dr. W. R. Wooldridge (Chairman, Parliamentary and Public Relations Committee).

Apologies for absence were received from Mr. G. N. Gould (Chairman, Technical Development Committee), Professor D. L. Hughes (Chairman, Editorial Committee), Mr. H. F. Hebeler (Chairman, Organising Committee), and Sir Frank Ware (Chairman, Overseas Committee).

There had been circulated lists of members of Committees, showing their attendances during the year 1955/6 and also the names of members recommended by Divisions to serve on particular Committees.

After full consideration, the following nominations of members to serve on Committees during 1956/7 were made, the wishes of Divisions being taken into account.

General Purposes and Finance Committee
20 members plus Past-Presidents and Chairmen of other Standing Committees

Atkinson, G.; Adams, A. J.; Anderson, K. P.; Arthur, G. H.; Beynon, A. G.; Brancker, W. M. (Miss); Dall, J. A.; Dixon, A. C.; Hardwick, E. F.; Hebeler, H. F.; Hughes, D. L.; Jennings, S.; Lovell, R; McCunn, J.; Murphy, C. T.; Phillips, R. N.; Robinson, W. G.; Tullis, G.; Tweed, Wm., and White, J. B.

Reserves: Hignett, S. L.; Mitchell, P. J.; Morgan, D. G.; Wyse, G.; McShane, H. G.

Technical Development Committee
26 members

Brancker, W. M. (Miss); Bruford, J. W.; Cotchin, E.; Crowhurst, F. A.; Dall, J. W.; Field, H. I.; Gordon, W. S.; Gould, G. N.; Hignett, S. L.; Hodgman, S. F. J.; Inglis, J. S. S.; Joshua, J. O. (Miss); King, J. O. L.; Knight, G.; Montgomerie, R. F.; Morris, E. G.; Pugh, P. D. S.; Roberts, R. S.; Robertson, A.; Rowlands, W. T.; Stableforth, A. W.; Taylor, E. L.; Towers, K. G.; White, J. B.; Wilkins, J. H., and Wilkinson, G. T.

Reserves: Wooldridge, W. R.; Grunsell, C. S.; Shanks, P. L.

Veterinary State Medicine Committee
20 members

Atkinson, G.; Black, N. M.; Blamire, R. V.; Bruford, J. W.; Davies, D. B.; Edwards, J. B.; Hardwick, E. F.; Hare, T.; Kirkwood, A. K.; McGhee, J. H.; McGrath, R. E.; Mitchell, P. J.; Perkins, L. E.; Pettett, D. W. S.; Pickering, G. F.; Powley, G. S.; Robertson, A.; Sutherland, A.; Tweed, Wm., and Wilsdon, A. J.

Reserves: Heath, G. B. S.; Uvarov, O. (Miss).

Home Appointments Committee
20 members

Arthur, G. H.; Black, N. M.; Blaxland, J. D.; Campbell, R. S. F.; Couldon, L. W.; Davies, G. O.; Donald, L. G.; Golledge, L. St. Bel.; Gordon, F. A.; Graham, A. M.; Grunsell, C. S.; Howell, D. G.; Jennings, S.; Macrae, R. I.; McGrath, R. E.; Moss, J. A.; Phillips, L. H. (Miss); Rowson, L. E. A.; Sutherland, A., and Tullis, G.

Reserve: De Garis, J. A.

Small-Animals Committee
20 members

Brown, G. F.; Buckler, G. K.; Denholm, T. C.; Freak, M. J. (Miss); De Garis, J. A.; Hebeler, H. F.; Hodgman, S. F. J.; Holroyd, H.; John, F. V.; Jones, B. V.; Kelly, K. G. R. (Mrs.); Laugier, G. V.; Nicholas, J. W.; Oliver, G. M. G.; Phillips, L. H. (Miss); Searles, G. W.; Tillemont-Thomason, V. (Miss); Thomson, A.; Uvarov, O. (Miss), and Wyse, G.

Reserves: Crowhurst, F. A.; Dixon, A. C.

Overseas Committee
15 members

Barnett, G.; Carmichael, J.; Chalmers, A. W.; Coulden, L. W.; Crawford, M.; Cronly, H.; Dayus, C. V.; Fisher, R. C. U.; Harbour, H. E.; Marshall, R. S.; Phillips, R. N.; Pool, W. A.; Sheriff, D.; Waddington, F. G., and Ware, F.

Reserves: Bell, F. R.; Peck, E. F.

Farm Live-stock Committee
20 members

Anderson, K. P.; Atkinson, G.; Barr, J.; Brown, G. F.; Buckler, G. K.; Chambers, F.; Denholm,

T. C.; Golledge, L. St. Bel.; Heath, G. B. S.; Howell, D. G.; Hignett, S. L.; John, F. V.; Lawfield, F. G. C.; McGhee, J. H.; Macrae, R. I.; McShane, H. G.; Pettett, D. W. S.; Pottie, A.; Tillemont-Thomason, V. (Miss), and Wright, A. J.

Reserves: Holroyd, H.; Forteath, A. D.

Editorial Committee

In 1954, Council accepted the recommendation that the Editorial Committee should serve in the first instance for two years and that at the end of that period, two members should retire by ballot each year.

This procedure has been followed with the result that the six members who will constitute the Editorial Committee for the year 1956/7, if agreeable and if endorsed by Council, are:—

E. Cotchin, Miss M. J. Freak, J. Hickman, D. L. Hughes, C. T. Murphy, and A. Robertson.

And the Editorial Committee wish to be allowed to co-opt Mr. C. B. Hart as in the year 1955/6.

Parliamentary and Public Relations Committee
20 members

Bell, F. R.; Donald, L. G.; Dunlop, J. J.; Hall-Patch, P. K.; Jones, B. V.; Kelly, K. G. R. (Mrs.); McCunn, J.; Nicholson, D. S. S.; Perkins, L. E.; Pugh, P. D. S.; Rowlands, W. T.; Ralston, A. G.; Sutton, E. G.; Thomson, A.; Uvarov, O. (Miss); Wooldridge, W. R., and Wright, A. J.

It was left to the Committee to make suggestions for filling the remaining three vacancies.

Attention was drawn to a minute of the Council in January that at this meeting the Chairmen should review the work of Committees during the past year with the object of giving guidance on the allocation of future business to the appropriate Committee. The Nominations Committee felt that it would be best to refer this to a meeting of the new Chairmen of Committees after they have been appointed in the Autumn.

THE ROYAL SOCIETY OF HEALTH

The following London sessional meetings of the Society are announced:—

Wednesday, October 31st, at 2.30 p.m., at the Society's Headquarters, *The Concentration of Slaughterhouses*, Sir James Turner, President, National Farmers' Union.

Wednesday, November 14th, at 10.30 a.m., at the Public Works and Municipal Services Congress, Olympia, Kensington, W.4, *Hygiene and Sanitation in the Fish Industry*, R. Spencer, of the Humber Laboratory, Food Investigation Organisation, D.S.I.R.

Wednesday, November 28th, at 2.30 p.m., at the Society's Headquarters, the Benjamin Ward Richardson Lecture on *Food Poisoning in Man, with Special Reference to Meat and Meat Products*, Professor Reginald Lovell.

The Chairman of the Council, Professor Harold Burrow, will preside at each meeting. Notifications of attendance should be sent 10 days beforehand to the Secretary of the Society, 90, Buckingham Palace Road, London, S.W.1.

MRS. J. B. BUXTON

Mr. George Eaton writes:—

I was first privileged to meet Mrs. Buxton in the summer of 1946, when I joined the panel of Final-Year Examiners at Streatley. In those immediate post-war years hotel accommodation was, to put it mildly, difficult, and for several examinations Professor and Mrs. Buxton, with their customary generosity, entertained the panel in their beautiful home, Childe Court. Only those engaged in running an establishment in those days of scarcity and rationing, can appreciate what careful planning it needed for a household to feed six hungry guests under those conditions!

Mrs. Buxton surmounted all difficulties, and although she was far from well herself, she never mentioned it, and was indeed the perfect hostess. The charm and kindliness of a very gracious lady will remain an abiding memory.

MR. ALFRED SOUTHERAN

Mr. Alfred Southeran, known affectionately as "George" by hundreds of veterinary surgeons throughout the world, died on Tuesday, October 2nd, at the age of 69. He came to London in 1920, and in 1921 obtained a position at the Royal Veterinary College as gardener for Sir John M'Fadyean, Principal of the College. Later he became operation assistant, and caretaker of the Beaumont Hospital.

Being present at all the lectures and operations "George" acquired a wide and varied knowledge, and became a fount of information which benefited many a struggling student. Many veterinary surgeons who passed through the College have cause to be thankful for the practical advice they received from "Old George" during their student years. A number of them remembered, and cards every Christmas from many places brought their greetings.

Mr. Southeran retired in 1952, and with retirement his world closed down, for the college was his life. But he did not pine when he retired, and had already begun making plans for the cottage into which he and his wife had moved; but ill health intervened and none of his plans materialised. He will be sadly missed by his wife and step-children.

PHOTOGRAPHS AT CONGRESS

Members of the Association who may wish to have copies of the photographs taken during Congress week, some of which have been published in THE VETERINARY RECORD, will wish to know that the photographer was Mr. Maurice Mead, of 35a, Parade, Royal Leamington Spa.

THE REGISTER OF VETERINARY SURGEONS

The under-mentioned ladies were admitted to membership of the Royal College of Veterinary Surgeons on Tuesday, October 2nd:—

Margaret Birks (Miss), 46, Carrington Road, Flixton, Lancs, B.V.Sc. (Liverpool); Rosemary Joan Williams (Miss), 2, Highland Road, Purley, Surrey, B.V.Sc. (Liverpool).

VETERINARIAN'S SHOW SUCCESSES

Major C. W. Townsend's three-year-old gelding, "Stanton Way," bred by himself, has been shown at the last six shows and has won the following prizes:—

Gransden and District Agricultural Show, 1st in Breeding Hunter Class, 1st in all age Hunter Classes and Challenge Silver Cup; Huntingdon County Show, 1st in his class and 1st Champion and Silver Challenge Cup for Breed Hunter Classes; Bedford County Show, 1st in his Class; Peterborough Show, 3rd in his Class; Bucks County Show, 3rd in his Class; Northampton County Show, 1st in his Class, 1st and Champion in Breeding Classes, and Silver Challenge Cup given by Lord Derby.

Major Townsend's hunting friends will be pleased to know that his Hunter brood mare "Stanton Dale" and her progeny have, during the last five years, won a total of 73 winning rosettes at leading shows.

PERSONAL

Births

BLYTH.—On October 7th, at W. J. C. Hospital, Braintree, to Elizabeth (*née* Aitken), M.R.C.V.S., and Anthony Blyth, M.R.C.V.S., a daughter, Penelope.

BRIDGE.—On September 18th, 1956, to Kay, wife of Peter Bridge, M.A., B.SC., M.R.C.V.S., D.V.S.M., of Silverthorne, Barton, Cambs, a son, Simon—brother for David and Susan.

GILLETT.—On August 30th, 1956, to Rosemary, wife of T. G. F. Gillett, M.R.C.V.S., of "Woodpecker," Holway Green, Taunton, a daughter, Fiona Rosemary.

MCCORMICK.—On . September 30th, 1956, to Marjorie, wife of Neill McCormick, M.R.C.V.S., Tirnanog, Newton Stewart, a son.

RAWLINS.—On October 6th, 1956, to Christine, wife of John Rawlins, M.R.C.V.S., of 60, Grenville Road, Braintree, Essex, a daughter, Frances Anne, sister for Jane.

COMING EVENTS

October

16th (Tues.). Joint Meeting of the Essex Division, B.V.A., with the Essex Branch of the N.F.U. at the Essex Institute of Agriculture, Writtle, Nr. Chelmsford, Essex, 7.30 p.m.

17th (Wed.). Meeting of the Section of Comparative Medicine, Royal Society of Medicine, at the Society's House, 5 p.m.

Meeting of the Society of Women Veterinary Surgeons at the Midland Hotel, Birmingham, 2.15 p.m.

18th (Thurs.). Ordinary General Meeting of the South Eastern Division, B.V.A., at the Royal Star Hotel, Maidstone, 2.30 p.m.

Association of Veterinary Teachers and Research Workers, Southern Region, Eighth A.G.M., Veterinary Laboratory, Weybridge, 1.30 p.m.

General Meeting of the Herts and Beds Division, B.V.A., at 70, Holywell Hill, St. Albans, 7.30 p.m.

19th (Fri.). Annual Dinner-Dance of the South Wales Division, B.V.A., at the Seabank Hotel, Porthcawl.

Meeting of the Mid-West Division, B.V.A., at the Berkeley Café, Clifton, 2.30 p.m.

24th (Wed.). Meeting of the R.A.V.C. Division, B.V.A., at the Zoological Society of London, Regent's Park, London, N.W.1, 12 noon.

26th (Fri.). Meeting of the Society for the Study of Animal Breeding at the Royal Veterinary College, Camden Town, N.W.1, 11.30 a.m.

Meeting of the Yorkshire Division, B.V.A., at the Royal Station Hotel, York, 2.30 p.m.

North of England Division, General Meeting, Agricultural Lecture Room, King's College, Newcastle upon Tyne, 2.30 p.m.

November

7th, 8th and 9th (Wed., Thurs. and Fri.). B.V.A. Council and Committee Meetings in London.

16th (Fri.). Dinner-Dance of the Yorkshire Division, B.V.A., at the Royal Station Hotel, York.

22nd and 23rd (Thurs. and Fri.). B.V.A. Conference on Supplements and Additives in Animal Feedingstuffs at the Victoria Halls, Bloomsbury Square, London, W.C.1.

B.V.A. COMMITTEE AND COUNCIL MEETINGS IN LONDON

Wednesday, November 7th, at 7, Mansfield Street

10.00 a.m. Veterinary State Medicine Committee.
12.00 noon Parliamentary and Public Relations Committee.
2.15 p.m. Farm Live-stock Committee.
4.00 p.m. Home Appointments Committee.

Thursday, November 8th, at 7, Mansfield Street

10.00 a.m. Small-Animals Committee.
12.00 noon Finance Sub-committee.
2.00 p.m. General Purposes and Finance Committee.

Friday, November 9th, Connaught Rooms, Gt. Queen Street

10.30 a.m. Meeting of Council.

FOOT-AND-MOUTH DISEASE

The area described in the schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease:—

IN THE COUNTY OF KENT

The Borough of Royal Tunbridge Wells.

In the Petty Sessional Division of Tonbridge: The parishes of Edenbridge, Hever, Chiddingstone, Cowden, Penshurst, Speldhurst, Bidborough, Southborough, and Leigh, and so much of the parishes of Tonbridge and Hildenborough as lies to the south and west of the main road (A.21) running from Pembury via Tonbridge and Hildenborough to Sevenoaks including the said road.

In the Petty Sessional Division of Sevenoaks: The parishes of Westerham, Brasted, Riverhead, and Sevenoaks Weald, and so much of the parishes of Sundridge and Chevening as lies to the south of the main road (A.25) running from Westerham to Riverhead including the said road.

IN THE COUNTY OF SURREY

In the Petty Sessional Division of Dorking: The parish of Burstow and so much of the parish of Horley as lies to the east of the main road (A.23) running from Redhill to Lowfield Heath excluding the said road.

In the Petty Sessional Division of Godstone: The parishes of Nutfield, Bletchingly, Godstone, Tandridge, Felbridge, Lingfield, Crowhurst, Oxted, Limpsfield, Titsey, Waldingham, Horne, and Tatsfield.

IN THE COUNTY OF EAST SUSSEX

The Petty Sessional Division of East Grinstead.

In the Petty Sessional Division of Frant: The parish of Crowborough, so much of the parish of Frant as lies to the west of the main road (A.267) running from Tunbridge Wells via Frant to Mayfield including the said road, so much of the parish of Rotherfield as lies to the north of the road (B.2100) running from Crowborough via Rotherfield to Bestbeech Hill including the said road, and so much of the parish of Withyham as lies within the Petty Sessional Division.

In the Petty Sessional Division of Haywards Heath: The parishes of Ardingly and Horsted Keynes.

In the Petty Sessional Division of Uckfield: the parishes of Danehill, Fletching, Maresfield, and Buxted.

The Foot-and-Mouth Disease Infected Area around Lingfield, Surrey, has been extended to include:—

IN THE COUNTY OF KENT

In the Petty Sessional Division of Dartford: So much of the parish of West Kingsdown as lies to the south and west of the road running from Stansted via Kingsdown to Farningham including the said road.

In the Petty Sessional Division of Sevenoaks: The parishes of Kemsing, Sevenoaks, and Seal.

In the Petty Sessional Division of Tonbridge: The parishes of Shipbourne and Hadlow and so much of the parishes of Tonbridge and Hildenborough as lies to the north and east of the main road (A.21) running from Pembury via Tonbridge and Hildenborough to Sevenoaks excluding the said road.

In the Petty Sessional Division of Malling: The parishes of Stansted, Wrotham, Trottiscliffe, Ryarsh, Addington, West Malling, Offham, Platt, Borough Green, Ightham, Plaxtol, Mereworth, Wateringbury, West Peckham, Nettlestead, and East Peckham.

The area described in the schedule below is declared to be an Infected Area for the purpose of preventing the spread of foot-and-mouth disease:—

IN THE COUNTY OF GLOUCESTER

The City and County Borough of Bristol.

The Petty Sessional Division of Lawford's Gate.

In the Petty Sessional Division of Thornbury: The parishes of Almondsbury, Alveston, Olveston, and Redwick and Northwick.

In the Petty Sessional Division of Sodbury: The parishes of Iron Acton, Westerleigh, Pucklechurch, Dodington, Dyrham, and Hinton and Cold Ashton.

IN THE COUNTY OF SOMERSET

The Petty Sessional Division of Keynsham.

In the Petty Sessional Division of Weston: The parishes of Swainswick, Charlcombe, North Stoke, Kelston, Corston, and Newton St. Loe.

In the Petty Sessional Division of Temple Cloud: The parishes of High Littleton, Timsbury, Farmborough, Clutton, Cameley, Chelwood, Publow, Stanton Drew, Stowey-Sutton, Chew Stoke, Chew Magna, Norton Malreward, and Nempnett Thrubwell.

In the Petty Sessional Division of Long Ashton: The parishes of Winford, Dundry, Borough Gurney, Long Ashton, Flax Bourton, Backwell, Brockley, Cleeve, Nailsea, Wraxall, Abbots Leigh, Easton in Gordano, Portbury, Portishead, North Weston, Weston in Gordano, Clapton, and Tickenham.

In the Petty Sessional Division of Axbridge: The parishes of Wrington and Butcombe.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Bucks. Hayden Hill Farm, Aylesbury (Oct. 1).

Caernarvon. Ffynnon Bach Farm, Tregarth, Bangor (Oct. 8).

Ches. Moorhead Farm, Tushington, Whitchurch (Oct. 5).

Kirkcudbright. Barend Farm, Parton, Castle Douglas (Oct. 4).

Renfrew. Barochan Cross Farm, Houston, Johnstone (Oct. 2).

Atrophic Rhinitis

Devon. Yarnicombe, Kingsbridge (Oct. 3).

Fowl Pest

Lancs. Wham House Farm, Moss Lane, Little Hoole; Toppings Farm, 20, Ploxbrow, Tarleton; 86, Blackgate Lane, Tarleton, Preston (Oct. 1); Pleasant View Nurseries, Southport New Road, Tarleton; Wheatlands Farm, Southport New Road, Tarleton, Preston (Oct. 2); Oak Farm, Church Road, and 22, Blackgate Lane, Tarleton, Preston (Oct. 3); Johnson House Farm, Ulnes Walton, Leyland; Cinder Lane Farm, Merebrow; Hornbys Farm, Gorse Lane, Tarleton; Churchill House, Durton Lane, Broughton, Preston (Oct. 4); Swillbrook Grange Farm, Woodplumpton; Green Bank Farm, Wigan Road, Leyland; Singleton Farm, Sharoe Green Lane North, Fulwood; 37, Canterbury Street, Chorley (Oct. 5); Hill House Farm, Carleton, Blackpool; Ainspool Farm, Churchtown; Oak House, Hall Lane, Longton, Preston (Oct. 6); Longton Heys Field, Liverpool Road, Longton, Preston; Fairfield, Southport New Road, Tarleton; Moor Hey, Lea Lane, Lea, Preston (Oct. 7); Threfalls Farm, Woodplumpton, Preston (Oct. 8).

Swine Fever

Ayr. No. 7 Holding, Collennan, Troon (Oct. 8).

Berks Plot 94, Field "A," Red Cow Allotments, Caversham, Reading (Oct. 8).

Derbys. Corner Farm, Bradbourne, Ashbourne (Oct. 4).

Essex. Sunny View, Pear Tree Green, Doddinghurst, Brentwood (Oct. 2); Carters Farm, Stebbing, Dunmow (Oct. 5).

Hants. Damales Farm, Hartley Wintney, Basingstoke (Oct. 2).

Lancs. Nansnook Farm, Bayhorse, Lancaster (Oct. 4); Swan Farm, Rainhill, Liverpool; Altys Farm, Kirklake Road, Formby, Liverpool (Oct. 8).

Norfolk. Oakhurst, Stoke Road, Tottenhill, King's Lynn (Oct. 4).

Salop. Betton Strange Farm, Shrewsbury (Oct. 4).

Staffs. Hall Gardens, Kingstanding, Tatenhill, Burton-on-Trent (Oct. 8).

Somerset. Downside Farm, West Town, Bristol; Upper Milton Farm, Wells (Oct. 8).

Warwicks. Brooklands Farm, Blind Lane, Aspley Heath, Tamworth-in-Arden (Oct. 2); Sties on land adjoining 65, Dawberry Street, Birmingham, 14 (Oct. 4); Banner Lane No. 2, Pig Club, Banner Lane, Coventry (Oct. 5).

Yorks. Station Road, Belton, Doncaster (Oct. 8).